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Critters in the Workplace: Bedbugs

Nellie J. Brown
Cornell University ILR School, njb7@cornell.edu

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Abstract

Unfortunately, critter infestations do exist in the workplace and people tend not to want to talk about them. All kinds of workplaces have had problems or infestations: hotels, hospitals, office buildings, department stores, and TV studios, as well as institutional environments such as prisons, old-age homes, daycare centers, nursing homes, schools, and orphanages. Unfortunately, critters can hop a ride home with us.

Bedbugs have been associated with humans worldwide for thousands of years. Pre-WWII, it has been estimated that about 30% of American homes had bedbugs. But after WWII, many long-lasting pesticides were developed, making bedbugs rare for ~50 years. Then, in the late 1990s, a world-wide resurgence began, attributed to the use of less-toxic pesticides, bedbugs developing pesticide resistance, and an increase in international travel.

Keywords

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Comments

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Nellie J. Brown, MS, CIH

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Bedbugs have been associated with humans worldwide for thousands of years. Pre-WWII, it has been estimated that about 30% of American homes had bedbugs. But after WWII, many long-lasting pesticides were developed, making bedbugs rare for ~50 years. Then, in the late 1990s, a world-wide resurgence began, attributed to the use of less-toxic pesticides, bedbugs developing pesticide resistance, and an increase in international travel.

Fortunately, bedbugs are not vectors of communicable disease. Lawsuits against landlords and lodging corporations have been based upon reactions to insect bites, embarrassment, and mental anguish. Bedbugs are very good at hiding during the day (usually) and then biting people at night; although, in severe infestations, they could be active during the day. They crawl but don't fly. Female bedbugs lay about five eggs daily throughout their adult lives. Eggs hatch in about 4-12 days into nymphs which must take a blood meal before molting to the next stage; the eating-then-molting cycle repeats for five nymph stages with the fifth stage molting into an adult. The adults may take several blood meals over several weeks, assuming a warm-blooded host is available. Adults live 6-12 months and may survive for long periods of time, perhaps up to a year, without feeding. They are great hitchhikers – traveling in bags, luggage, etc. Infestations are more likely in residential facilities where the critters can feed and reproduce, so infestations show signs of all the life stages of the bedbug: eggs, egg cases, nymphs, adults, and lots of fecal pellets.

How do we get rid of bedbugs? The basics of integrated pest management include…

- Start by engaging the cooperation of management, staff, and building/organization occupants.
- Make sure that the critter has been correctly identified as a bedbug, not some other pest.
- Encourage people to report signs of critters. Keep records, including dates when and locations where bedbugs are found. It is helpful to be able to respond quickly, before they spread further in a building.
- Identify the source: how are they being brought into your workplace? They can be transferred among people, move around in a building (including via ductwork and pipe chases), or be brought into your workplace, transported in purses, backpacks, luggage, bedding, and used furniture.
- Thoroughly inspect the facility and identify <u>all possible hiding spots</u>.

- Clean all items within a bedbug-infested area.
- Reduce clutter where bedbugs can hide through storage and/or disposal of items.
- Eliminate bedbug habitats.
- Physically remove bedbugs through cleaning; using a HEPA vacuum can reduce allergens, also.
- Kill bedbugs using heat or cold treatments, pesticides, or professional fumigation

It is important to identify all possible hiding spots, so that these can be inspected and, where possible, repairs or sealing of cracks or screw holes. If suspected, but not found, an option is the use of a bedbug-detecting dog. While dogs can positively indicate a problem, it is unclear if they can rule out a problem, especially if bedbugs are hiding in an area inaccessible to a dog. The dog handler team should be recognized by a certifying organization, such as National Entomology Scent Detection Canine Association.

Examples of hiding spots include: cracks and crevices in walls, upholstered furniture; screw holes under chairs or tables, mattress seams, behind paintings or loose pieces of wallpaper, light fixtures, spaces within and along floor boards, edges of carpets, molding, or inside hollow decorations or ornaments (historically, these were sold with corks in the hole in the underside). After such an inspection, the next step is to organize and clean all the items:

- Move furniture away from walls
- Empty furniture of items, including removing drawers
- Organize belongings and place them in clear plastic bags and seal them until cleaned of bedbugs
- Launder all clothing and bedding. Temperatures above 97°F and below 48°F will kill most bedbugs.
- All furniture, mattresses, and other locations where bedbugs were sighted should be vacuumed every day. The vacuum bag should be placed in the freezer for at least 24 hours before disposal.
- Clean surfaces using essential oil soaps (pine, orange, lemon), enzyme soaps, or sudsy detergents (not bleach or ammonia)

Both deep cleaning and pest elimination needed to address bedbug allergy and asthma. Bedbugs defecate large amounts of histamine, as part of a pheromone that helps them to get together in groups, and thus contaminates the fecal pellets. While heat treatments (and probably cold treatments, as well) eradicate bedbug infestations, they fail to reduce the histamine level. Histamine is highly stable in household dust and persists for months following bedbug eradication. HEPA vacuuming or washing down surfaces is needed to remove the histamine.

In bad infestations, bedbugs have been found in computers and electronics, light fixtures, smoke detectors, wheelchairs, book spines, and phones -- so heading off an infestation quickly is so very helpful. There are strategies reported not to work. These include abandoning rooms or even a whole facility, the use of “bug bombs” or total release foggers (they don’t penetrate

into hiding places), or simply discarding beds and bedding. If items are discarded, they should be wrapped in plastic before transport and labeled as “infested with bedbugs” or made unsalvageable. Otherwise, people will pick them up at the sidewalk or dumpster-diving, spreading the critters.

Bedbugs can infest airplanes, ships, trains, buses, and almost any other travel vehicle, so workers and travelers should be alert to the signs of an infestation. When sleeping in hotels or other unfamiliar environments, a prudent approach is to check the premises for bedbugs or their excreta. Before you unpack anything, check the mattress cords, cracks and crevices in box springs, and headboards. Look for bloodstains from bites (rust-colored stains) on mattresses; look for bugs, egg cases, and excreta on the underside or back of headboards.

A variety of options are available to kill bedbugs:

- Heat treatment leaves furniture and fabrics unharmed but is lethal to all stages of an insect's life cycle, from egg to adult, within minutes. For example, steam cleaning and steamers could be used for floors, carpets, mattresses, and upholstery. One heat treatment system kills by heating the infested premises or vehicles to about 56 °C (132^0 F), such as by using a suitcase-sized heat exchanger, an array of pipes, and a mobile boiler unit to heat the air. However, this method may not heat mattresses thoroughly enough.
- Rapid-freeze technology using carbon dioxide snow is also lethal to all stages of an insect's life cycle.
- Chemical control can involve using pesticides containing essential oils (such as geraniol, cedarwood oil, cinnamon oil, or neem oil) or pyrethroids. Dust products -- such as borates, diatomaceous earth (food grade), or silica gel -- can provide long-term control if in out-of-the-way places, such as under baseboards or in wall voids, that don’t get wet. Bed bugs may not groom themselves to the same degree as other pests, so dusts requiring consumption may be less effective than anticipated.

Consultation with a professional pest control company may be needed. The local Cooperative Extension office can be contacted to learn about insecticides that are registered for use against bedbugs in your state, and the National Pesticide Information Center can be reached at 1-800-858-7378. Due to pesticide resistance, products used may vary around the country.

Workplace policies may be able to prevent infestation and re-infestation:

- Have policies on
    - Donations – receiving or giving
    - Discarded items – receiving or giving
    - Items collected from the street
    - Complaints about pests or bites
    - Designating a pest management coordinator
    - Intake procedures for clients

- Use metal frame beds. Eliminate head boards. Use vinyl-covered or seamless mattresses. If vinyl mattresses have holes, consider repairing them with tape or discarding them. For regular (non-vinyl) mattresses, mattress encasements (similar to those used for dust mite allergies) may be helpful. Encase the box spring too -- it is more likely to harbor bedbugs than the mattress. Replace all plush furniture with metal, plastic, or items easily cleaned with soap and water. Wooden dressers, wardrobes, tables and other furniture can be painted white for easy inspection. Wicker furniture may be a problem as it provides infinite harborage to bedbugs and is impossible to treat effectively (although it could be bagged for a year to starve the bugs or placed outside or in a garage during hot or cold weather).
- Loose cushions should be small enough to be placed in a dryer and dried on a hot setting.
- Use only white or light-colored sheets.
- Wooden baby cribs should be painted white; fill gaps in the frames with silicone caulk.
- Caulk with silicone: moldings, joints, and openings around pipes to prevent bedbugs traveling to find new habitats and victims. Any crevices where a credit card will fit should first be sealed with silicone caulk to eliminate hiding spots.

How could you avoid picking up bedbugs in the workplace? Of course, it would be useful to know or ask ahead of time whether the room or space has bedbugs. If so, do not bring bags or personal belongings inside the room; carry as little as possible with you. Wearing a Tyvek suit or similar protective coveralls will prevent bedbugs from hitching a ride on your clothes or shoes. As you leave the premises, discard the coveralls by changing immediately and by sealing the suit in a plastic bag. For washable work clothes, dissolving plastic bags are available that allow the user to isolate infested clothing until it can be placed in the wash. These bags dissolve in the laundry.

For social and medical service providers making home or institutional visits, you could bring a portable stool to sit on and remain in the middle of the room. If this is not possible, be sure to sit on a hard chair, not on plush furniture or beds. Carefully shake out your clothes while standing outside before returning to your car or office. You could bring a change of clothes and shoes for working in the field, then change clothes at work and keep the field clothes and shoes in a sealed bag, removing items for laundering or cleaning. Unfortunately, there do not appear to be currently any insect repellents that are labeled for bedbugs.

The information in this fact sheet was originally developed for The Center for Occupational & Environmental Medicine at the Erie County Medical Center (ECMC), 462 Grider St., Buffalo, NY 14215.